

Listing of Claims

Please amend the claims as follows. This Listing of Claims will replace all prior versions and listings of claims in this application:

CLAIMS

1. – 29. (Canceled)

30. (Currently Amended) An electroluminescent compound as claimed in claim 29 ~~49~~, wherein M is iridium and n is 2.

31. (Currently Amended) An electroluminescent compound as claimed in claim 29 ~~49~~ wherein at least one of R₁, R₂, R₃[[,]] and R₄, ~~R₅ and R₆~~ includes a group selected from aliphatic groups[[,]] and aromatic groups, ~~heterocyclic groups, alkoxy groups, aryloxy groups, carboxy groups, substituted and unsubstituted phenyl groups, fluorophenyl groups, biphenyl groups, phenanthrene groups, anthracene groups, naphthyl groups, fluorene groups, and heterocyclic groups.~~

32. – 33. (Canceled)

34. (Currently Amended) An electroluminescent compound as claimed in claim 33 ~~49~~ wherein R₂ is a phenyl group or a substituted phenyl group.

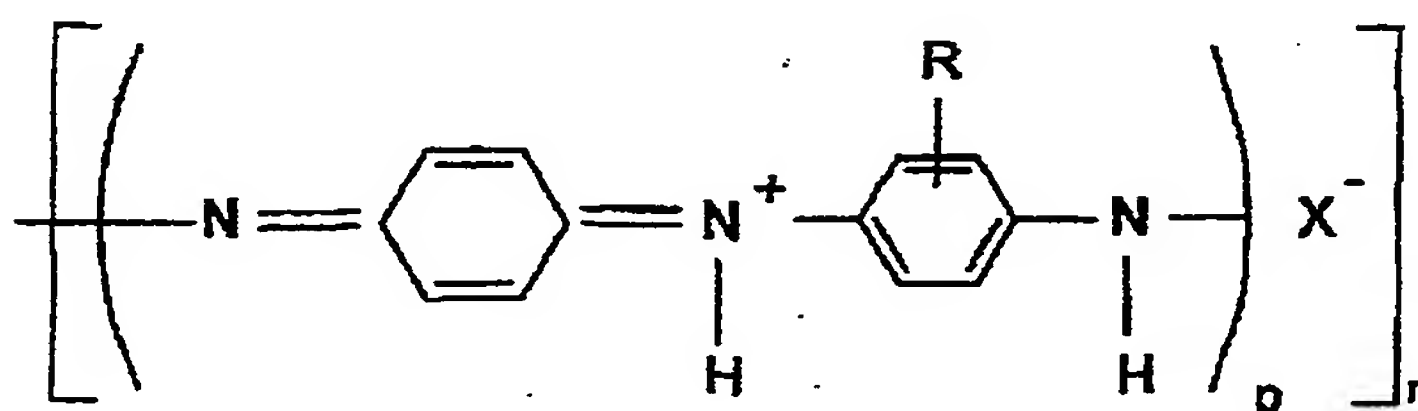
35. – 37. (Canceled)

38. (Currently Amended) An electroluminescent device comprising: (i) a first electrode; (ii) a second electrode; and, (iii) a layer of an electroluminescent material according to claim ~~29~~ 49 positioned between said first and second electrodes.

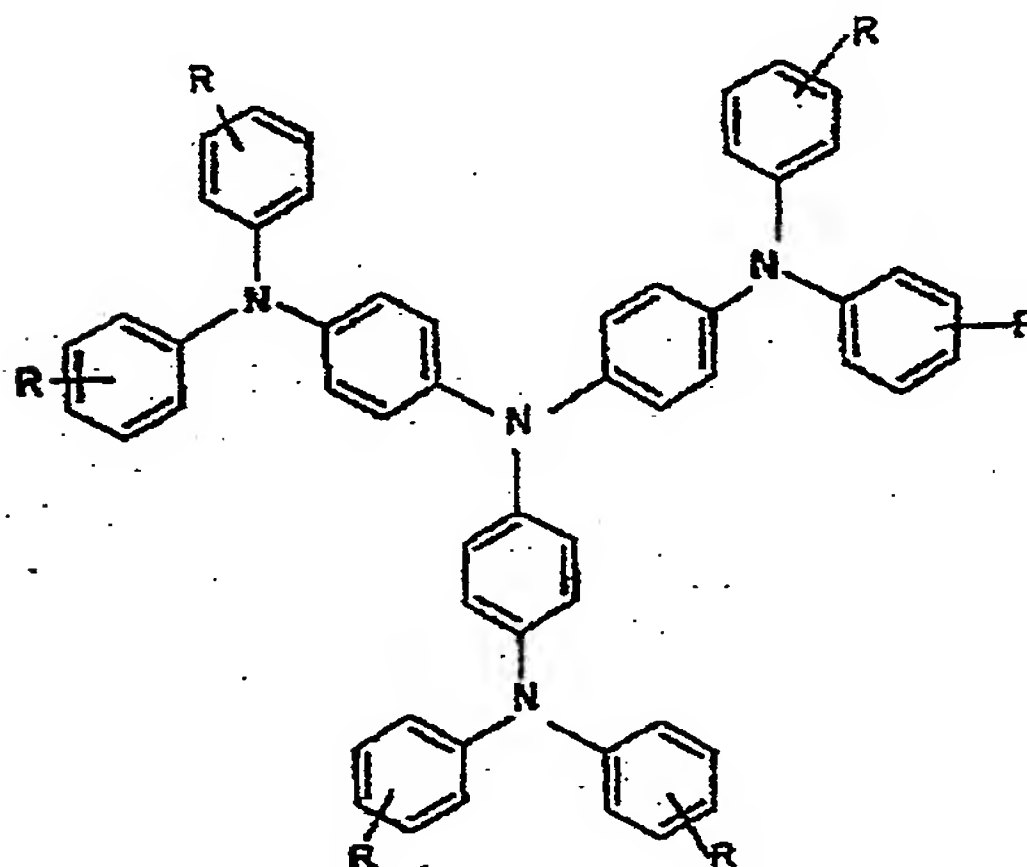
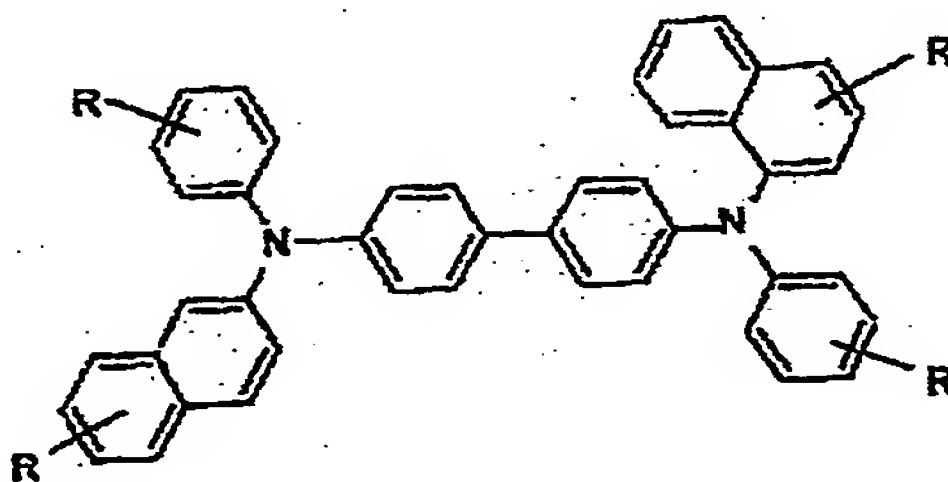
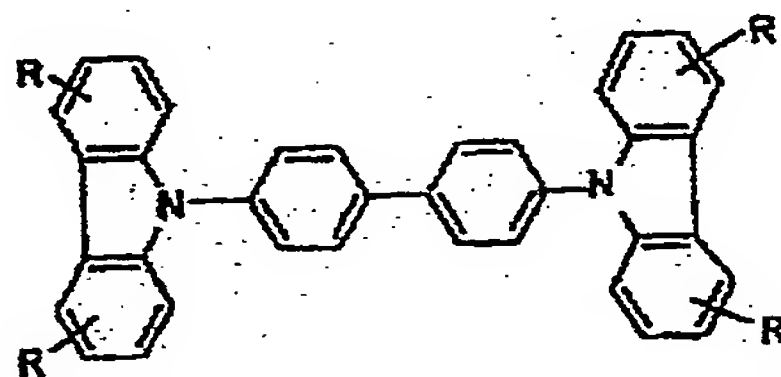
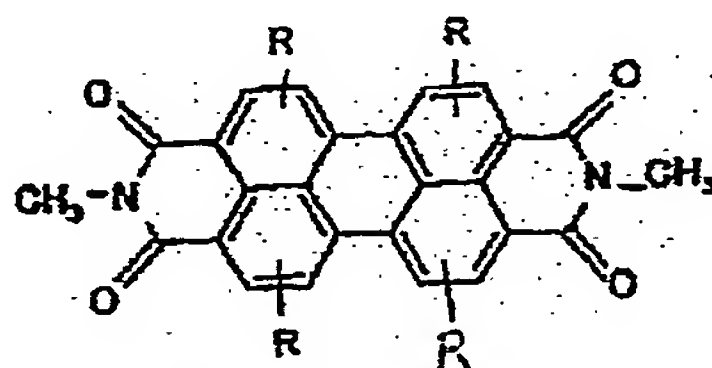
39. (Previously Presented) An electroluminescent device according to claim 38 further comprising a layer of a hole transmitting material positioned between the first electrode and the layer of electroluminescent material.

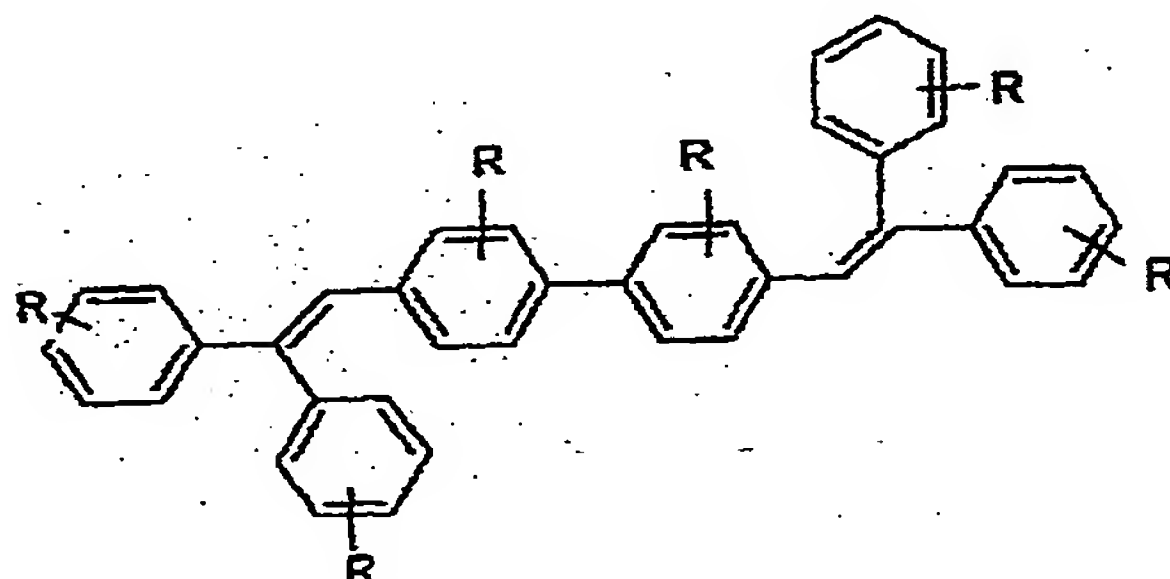
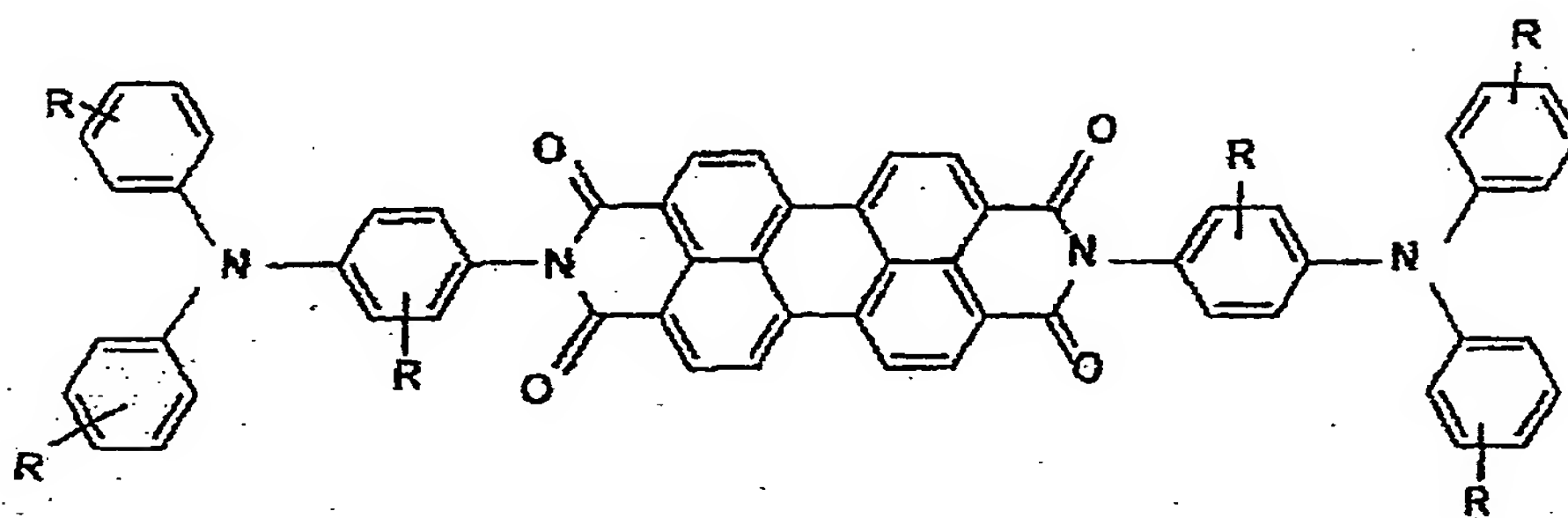
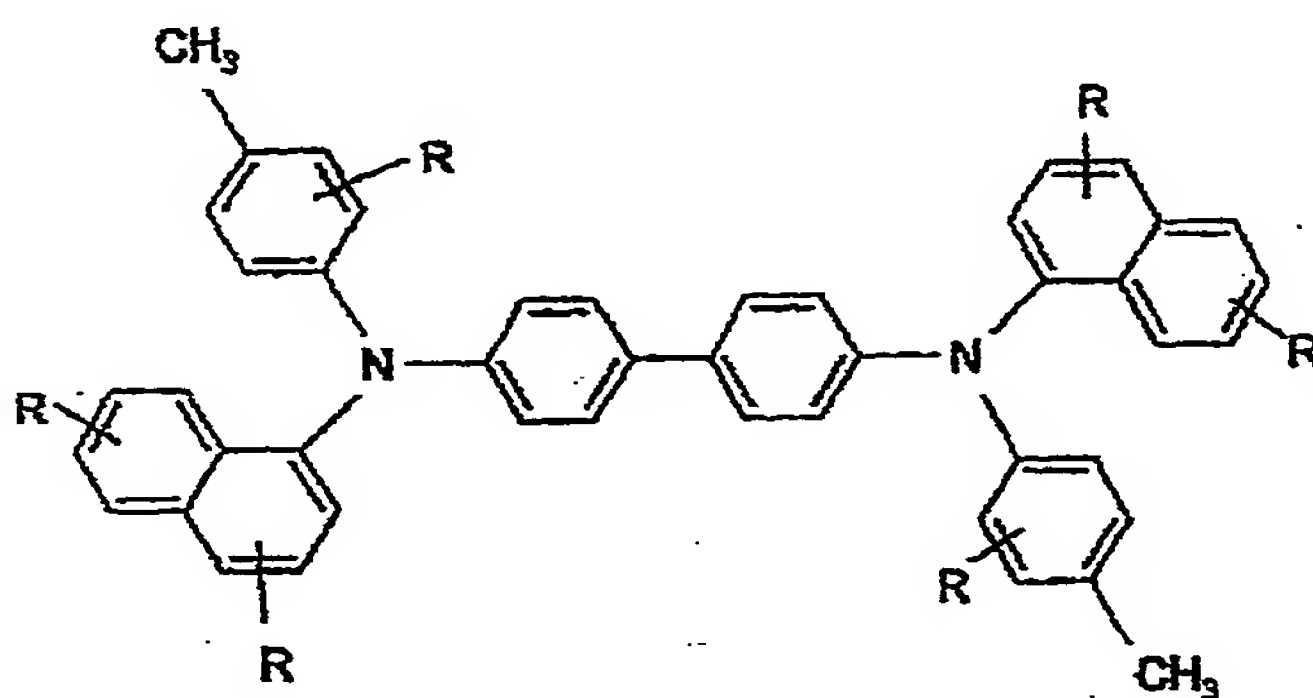
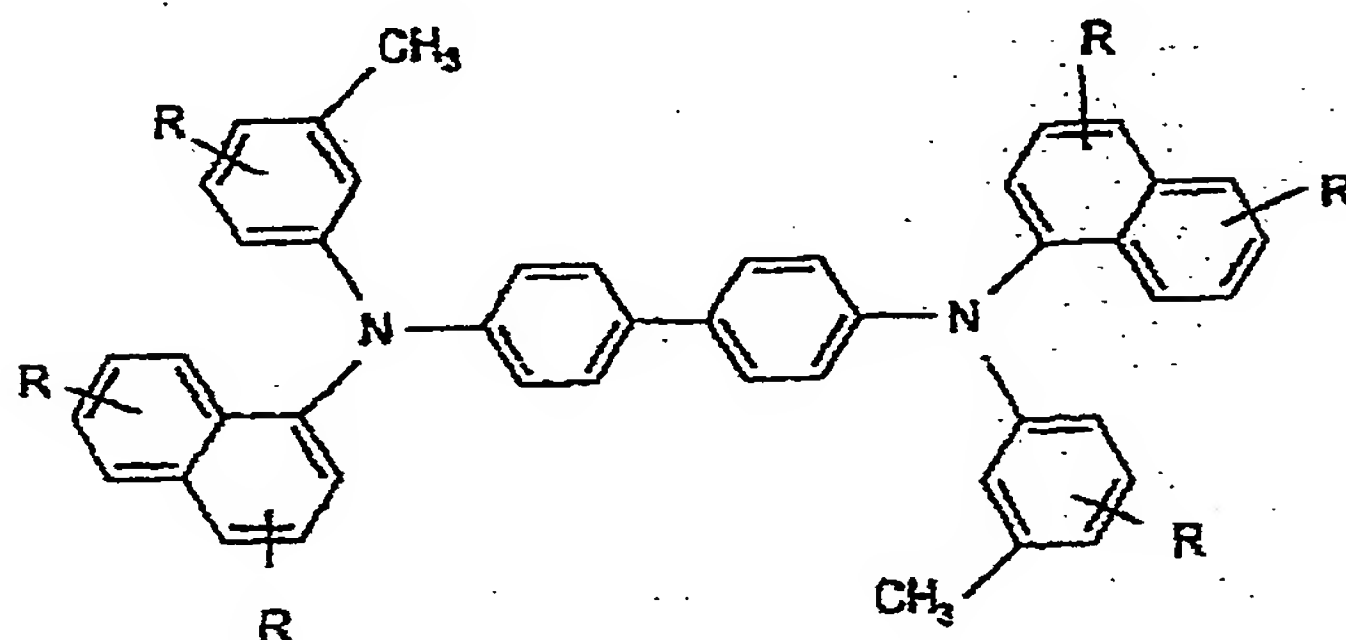
40. (Currently Amended) An electroluminescent device according to claim 39 wherein the hole transmitting material is selected from the group consisting of:

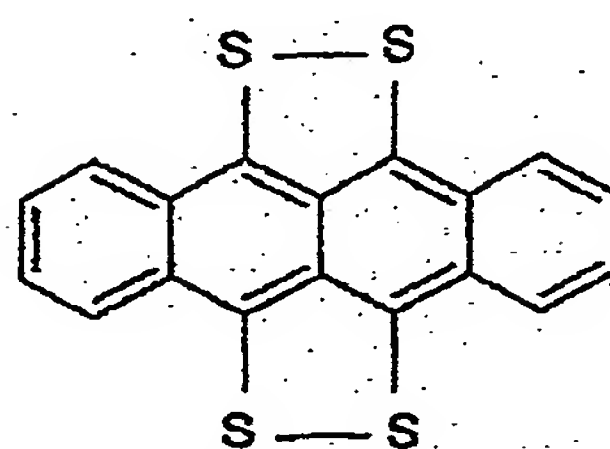
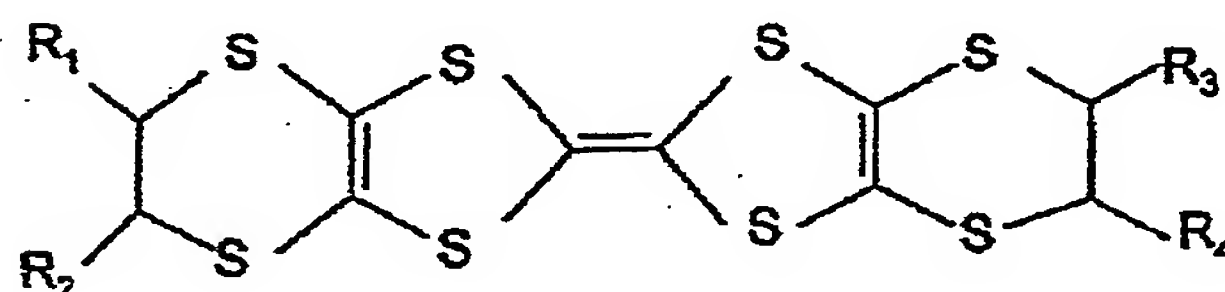
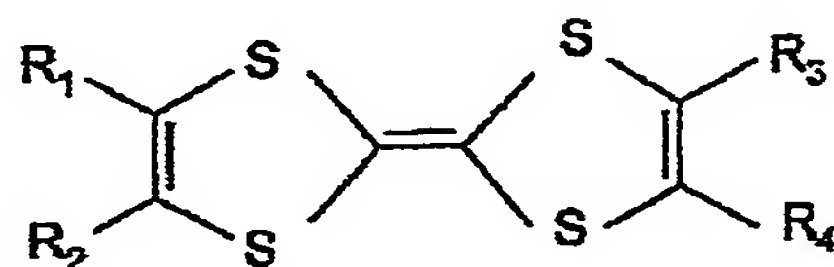
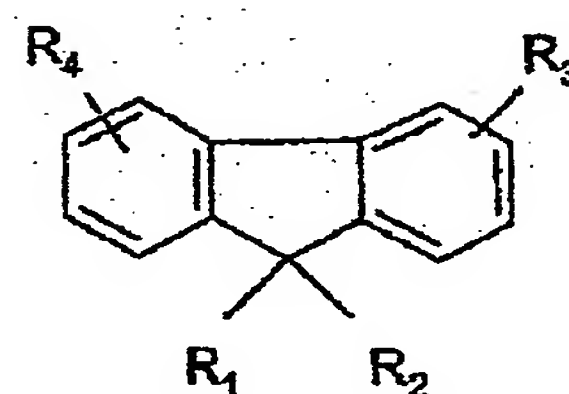
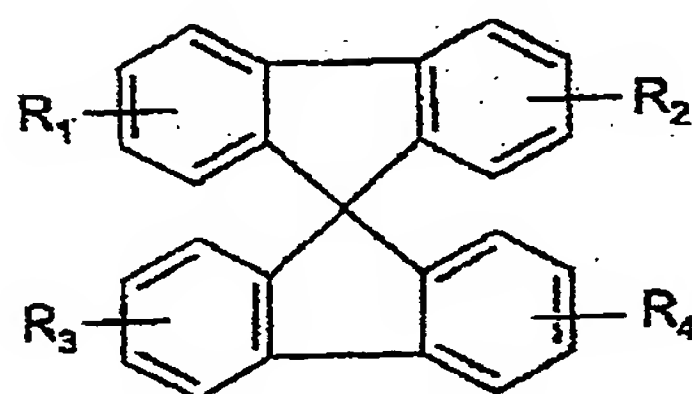
- (a) an aromatic amine complex;
- (b) ~~a polyaromatic amine complex;~~
- (c) ~~(b)~~ a film of a polymer material selected from the group consisting of poly(vinylcarbazole), ~~N,N'-diphenyl-N,N'-bis-(3-methylphenyl)-1,1'-biphenyl-4,4'-diamine (TPD)~~, polyaniline, substituted polyanilines, polythiophenes, substituted polythiophenes, polysilanes and substituted polysilanes;
- (d) ~~(c)~~ a film of a compound having a general chemical formula selected from the group consisting of: ~~formula (VII) and formula (VII) herein, and the formulas of figures 4 to 8 of the drawings;~~

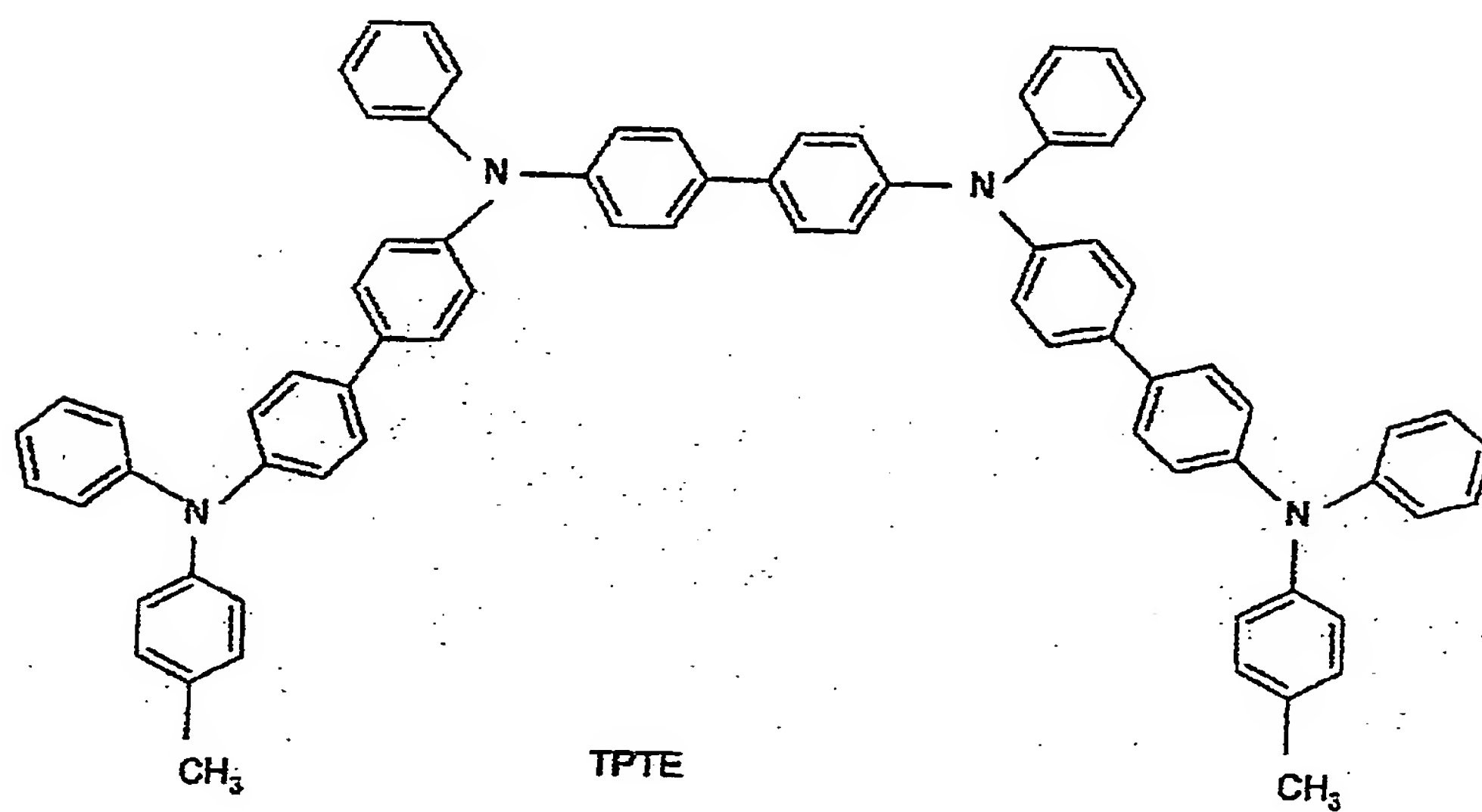
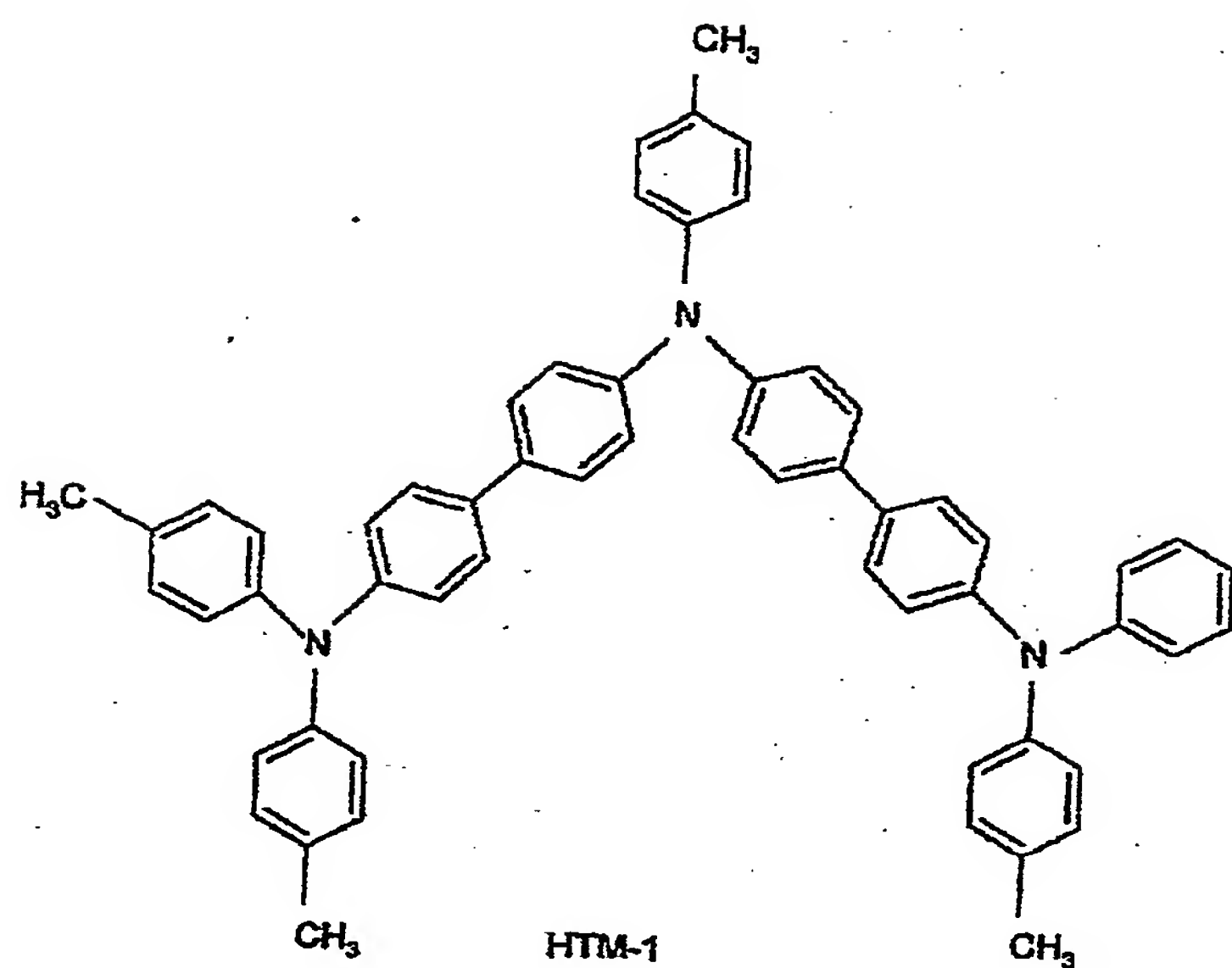


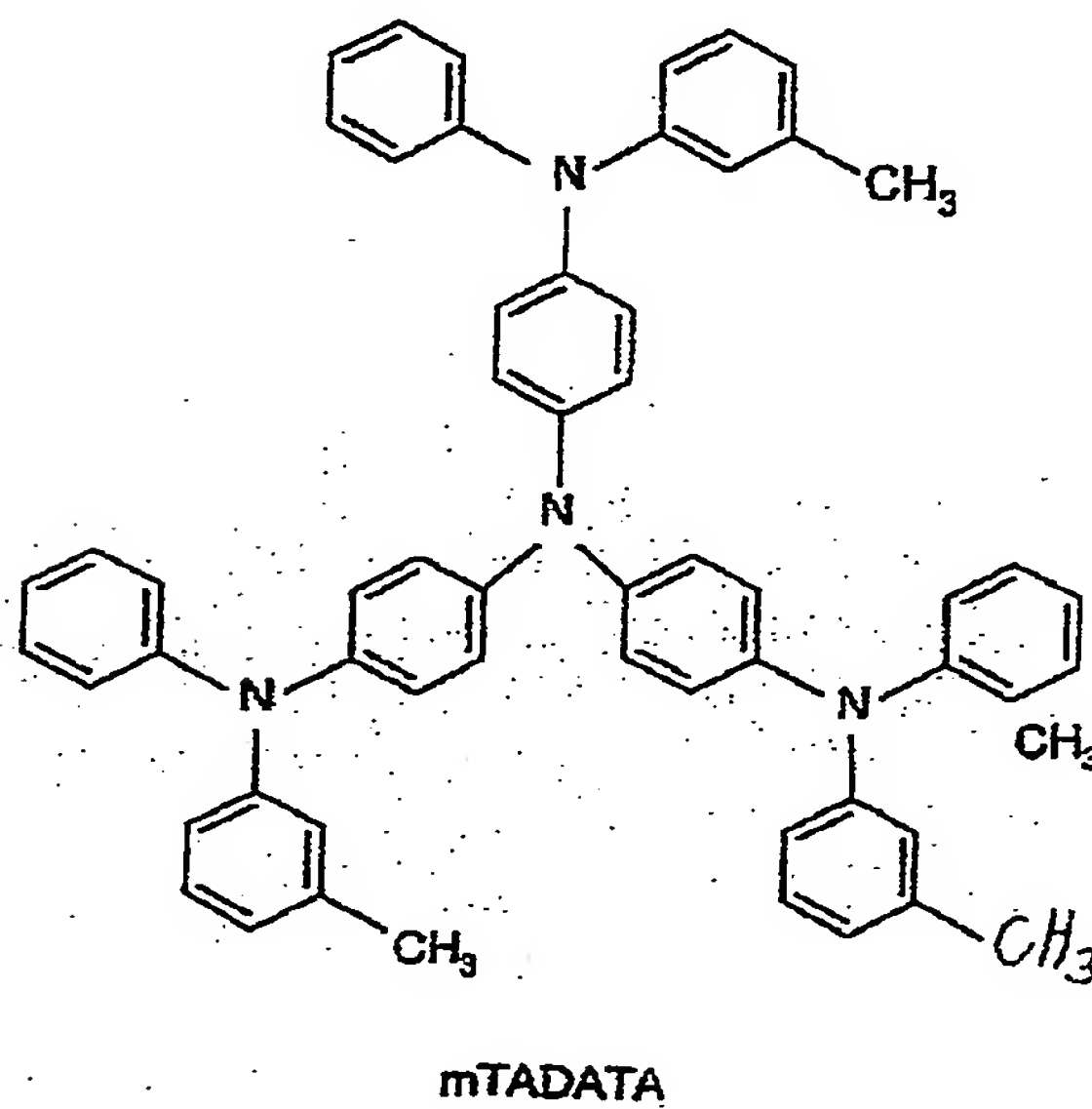
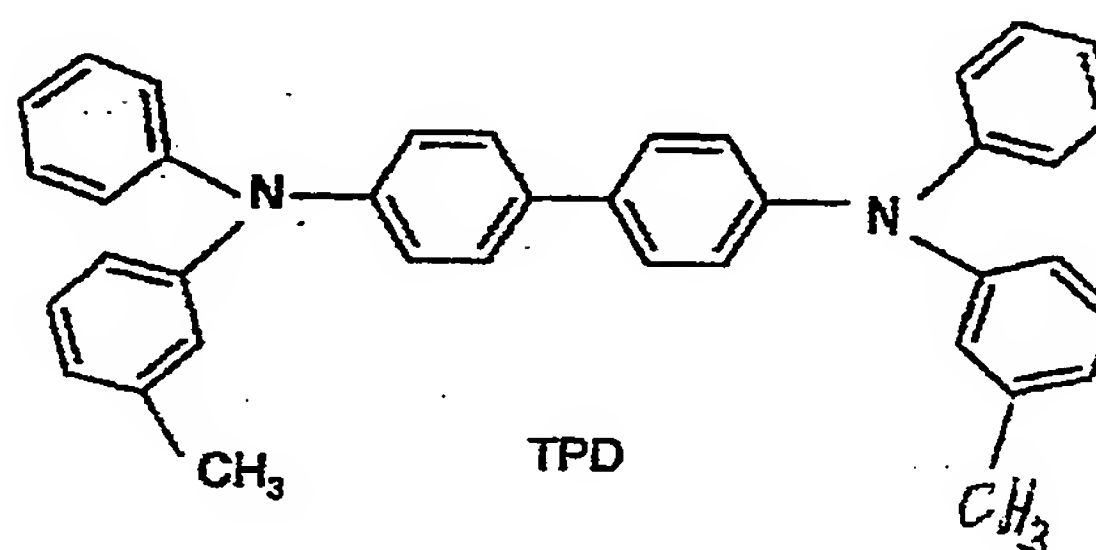
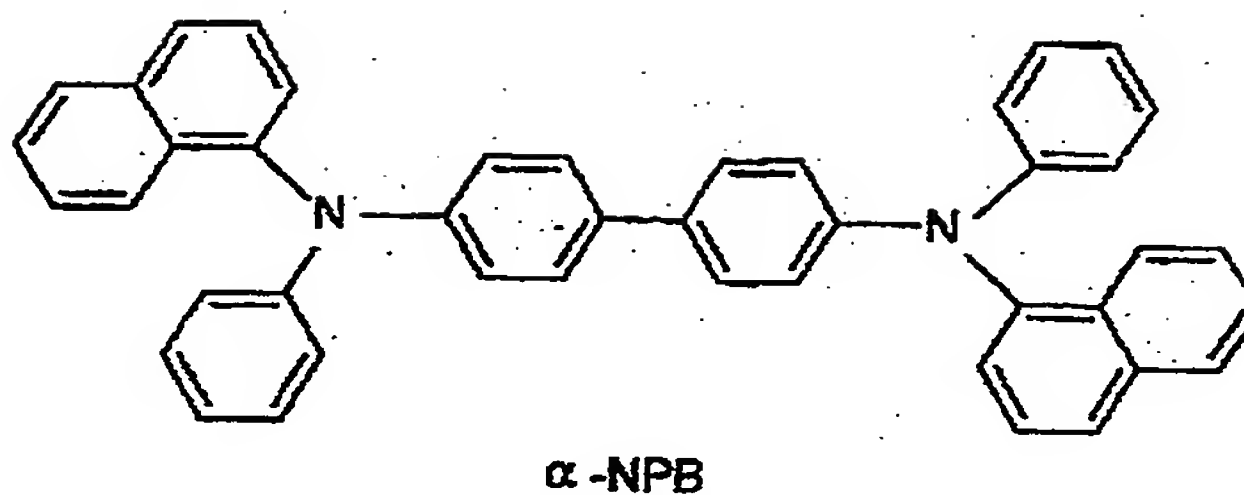
where p is from 1 to 10, n is from 1 to 20; R is alkyl or aryl; and X is an anion;











where R is alkyl or aryl; and where R₁, R₂, R₃ and R₄ can be the same or different and are selected from hydrogen; substituted and unsubstituted aliphatic groups; substituted and unsubstituted aromatic, heterocyclic and polycyclic ring structures; fluorocarbons; halogens; and thiophenyl groups; R₁, R₂, R₃ and R₄ can also form substituted and unsubstituted fused aromatic, heterocyclic and polycyclic ring structures and can be copolymerisable with a monomer.

~~(e) — a compound selected from the group consisting of a copolymer of aniline; a copolymer of aniline with o-anisidine, m-sulphanilic acid, or o-aminophenol; and a copolymer of o-toluidine with o-aminophenol, o-ethylaniline, o-phenylene diamine or with an amino-anthracene;~~

~~(f) — a conjugated polymer; and~~

~~(g) — a conjugated polymer selected from the group consisting of poly(p-phenylenevinylene) PPV and copolymers including PPV, poly(2,5-dialkoxyphenylene vinylene), poly(2-methoxy-5-(2-methoxypentyloxy)-1,4-phenylene vinylene), poly(2-methoxypentyloxy)-1,4-phenylenevinylene), poly(2-methoxy-5-(2-dodecyloxy)-1,4-phenylenevinylene) and other poly(2,5-dialkoxyphenylenevinylenes) with at least one of the alkoxy groups being a long chain solubilising alkoxy group, poly-fluorenes and oligofluorenes, polyphenylenes and oligophenylenes, polyanthracenes and oligo-anthracenes, polythiophenes and oligothiophenes.~~

41. (Previously Presented) An electroluminescent device according to claim 38 wherein the electroluminescent material is mixed with a hole transmitting material.

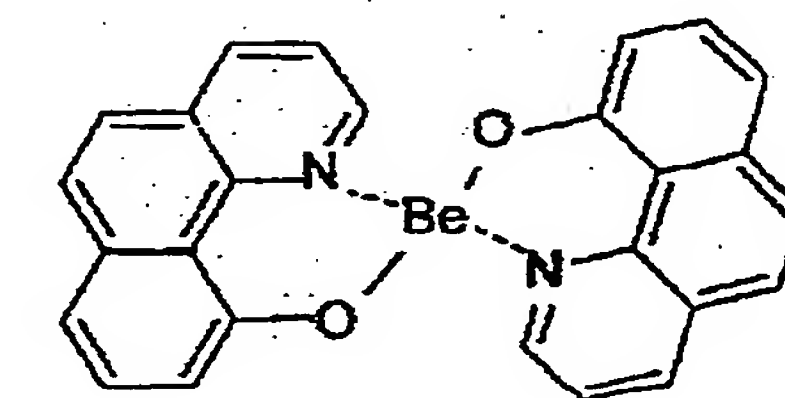
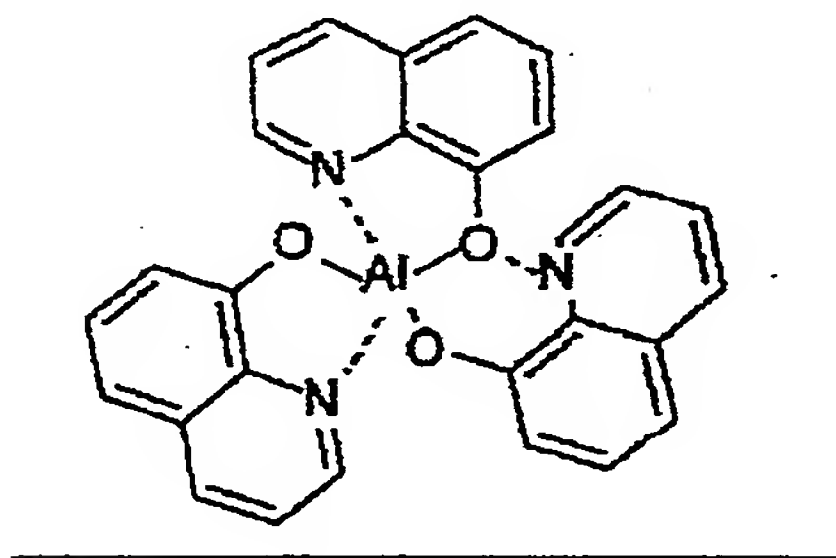
42. (Currently Amended) An electroluminescent device according to claim 38 wherein a layer of an electron transmitting material is positioned between an electrode that serves as a cathode element and the layer of electroluminescent material.

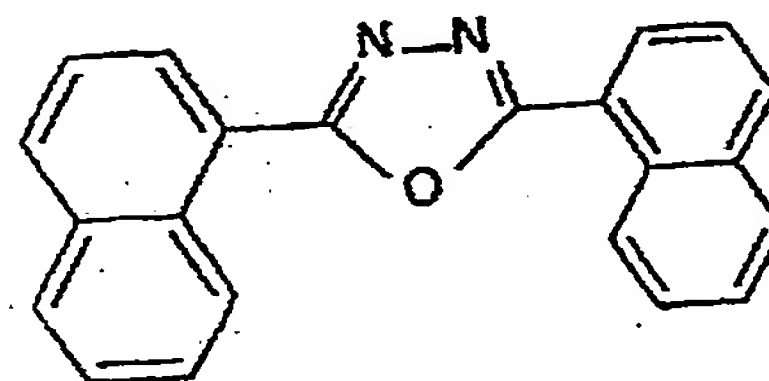
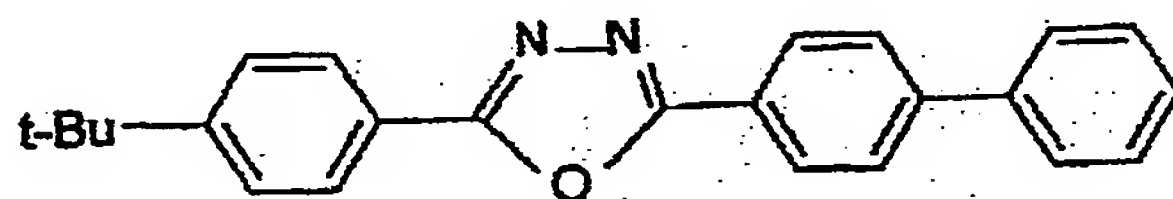
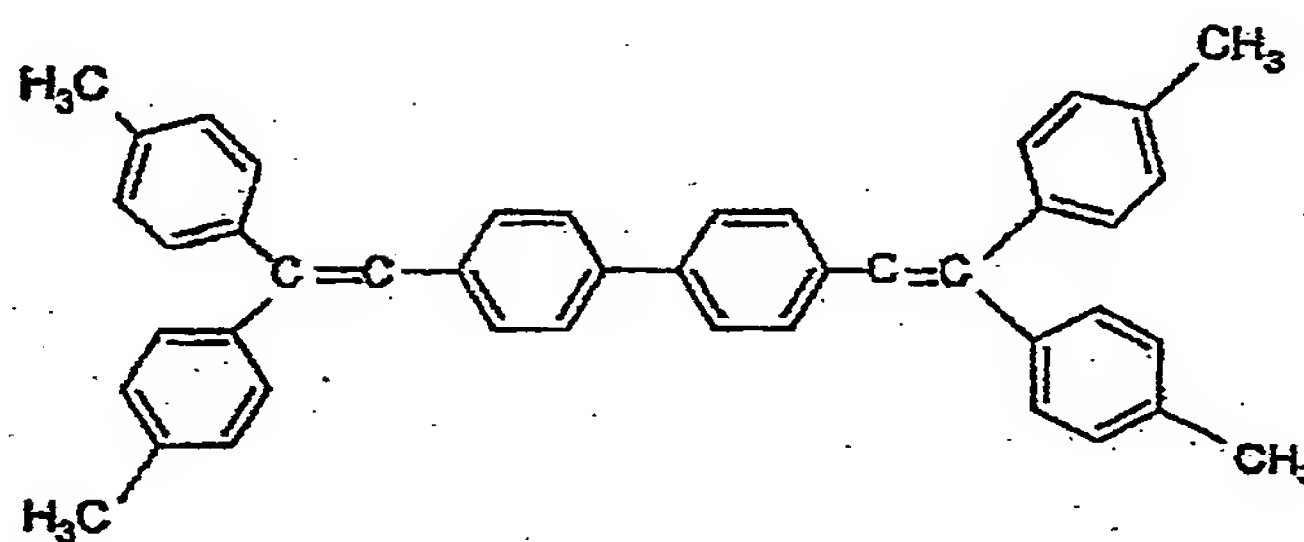
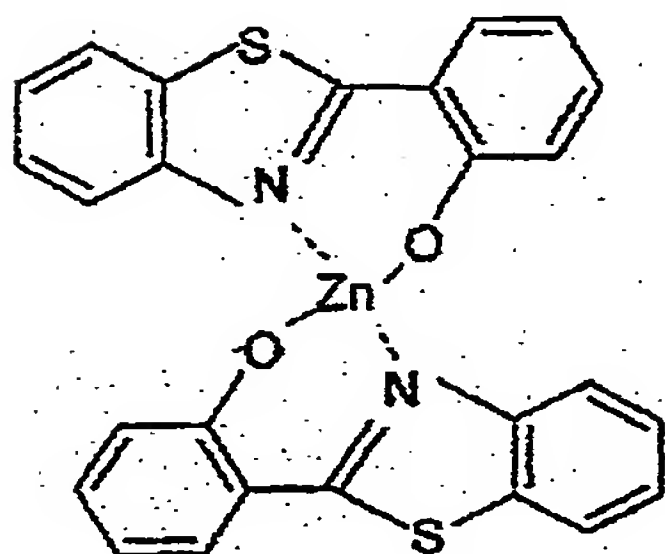
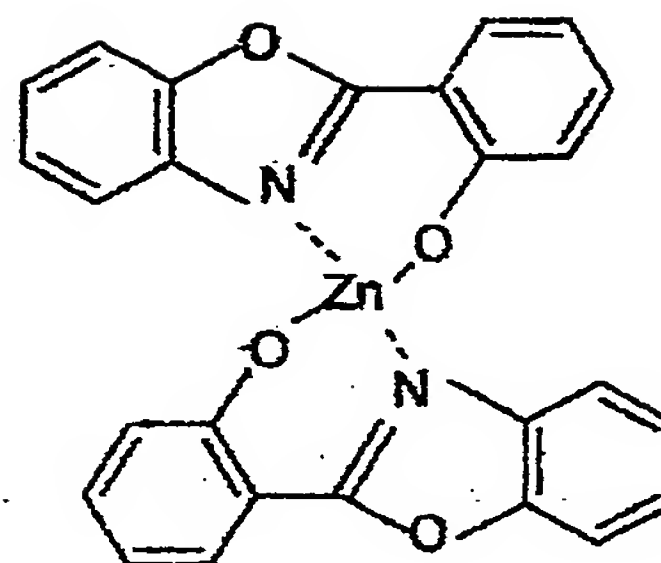
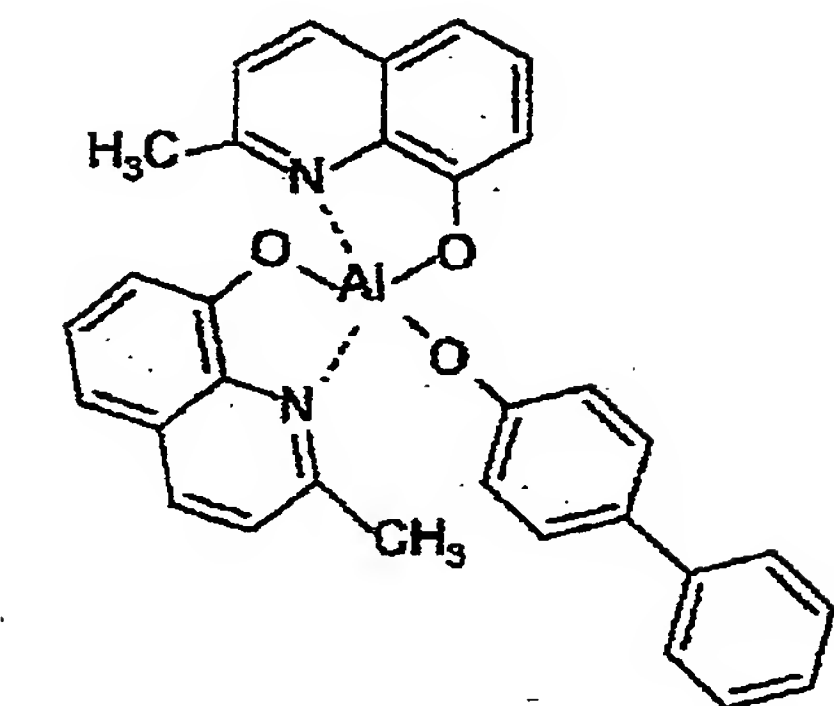
43. (Previously Presented) An electroluminescent device according to claim 42 wherein the electron transmitting material is a metal quinolate.

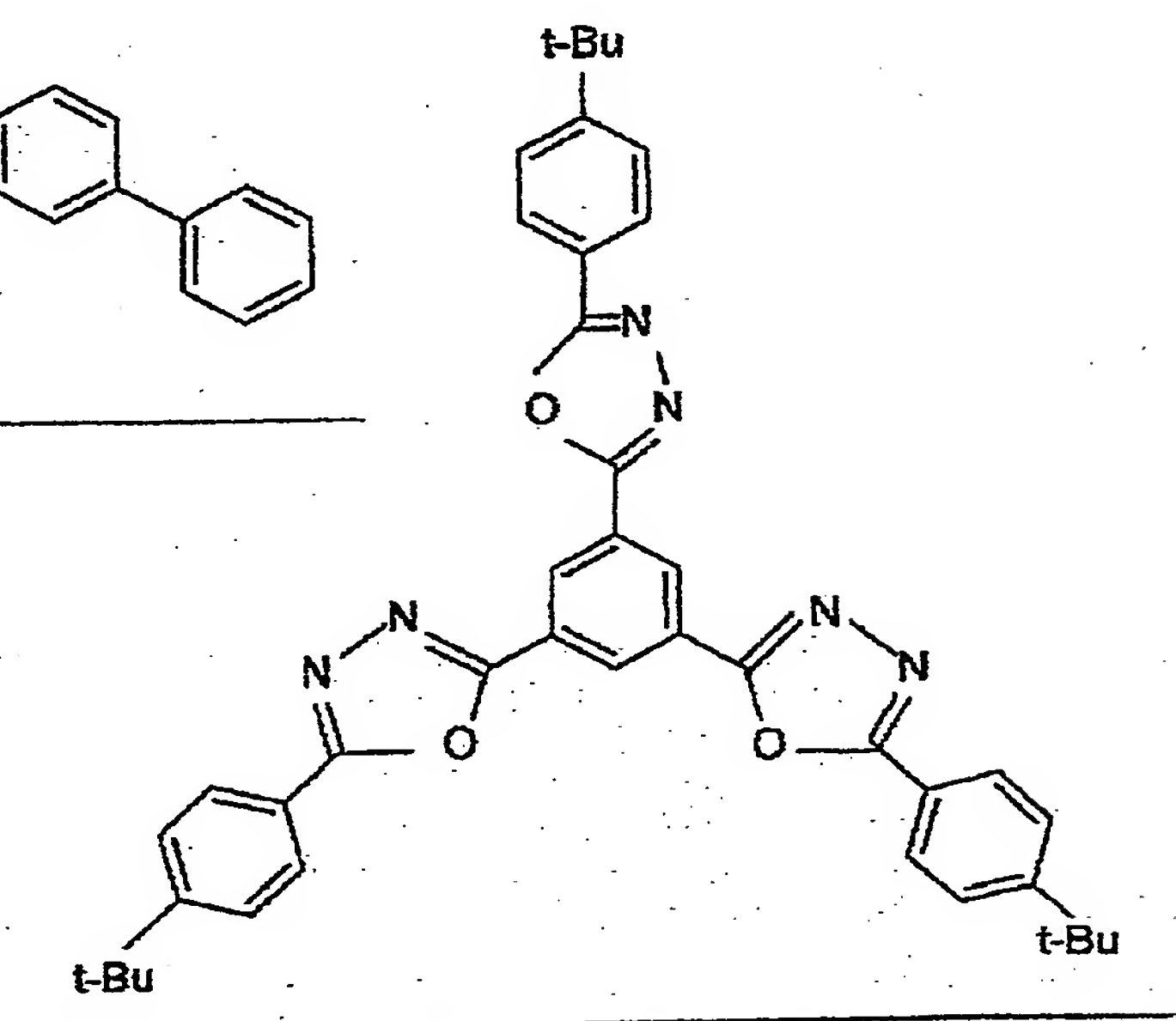
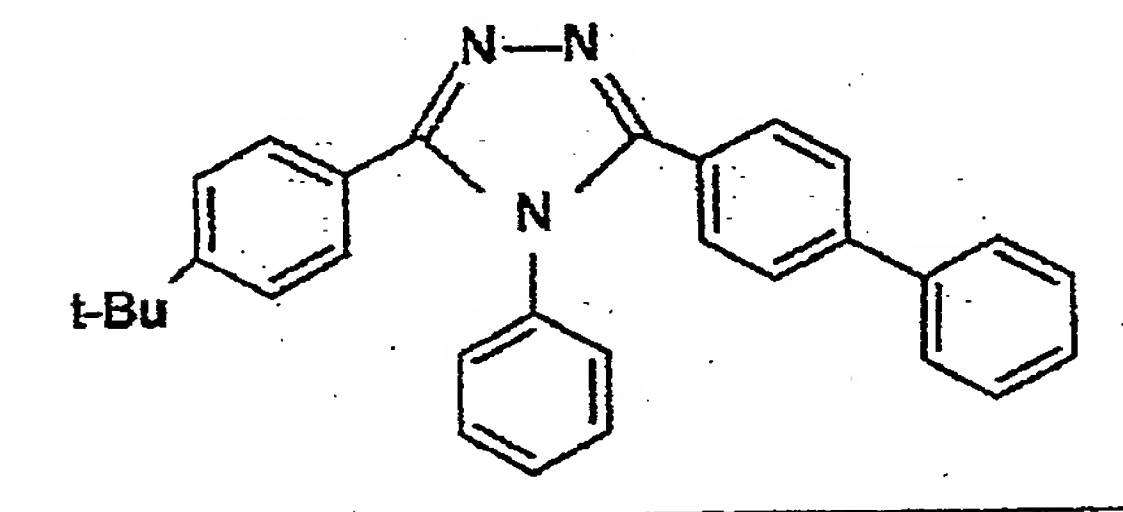
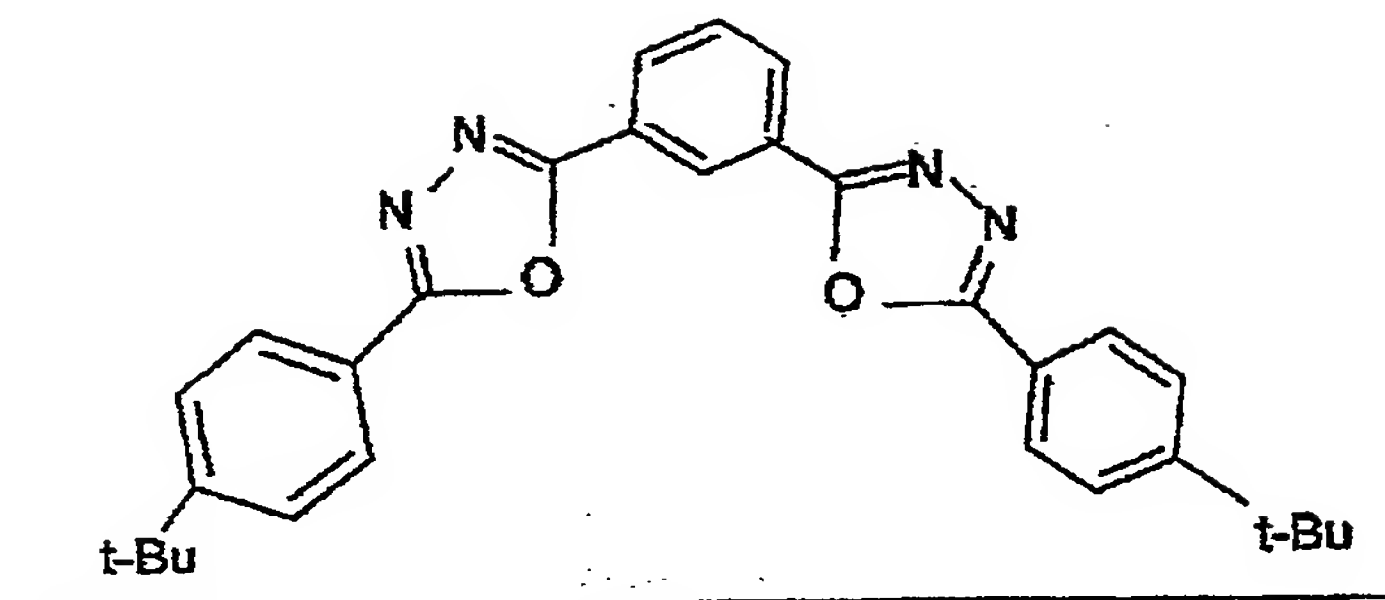
44. (Currently Amended) An electroluminescent device according to claim 43 ~~42~~ wherein the electron transmitting material is a metal quinolate selected from the group consisting of aluminum quinolate, zirconium quinolate and lithium quinolate.

45. (Currently Amended) An electroluminescent device according to claim 42 wherein the electron transmitting material is selected from the group consisting of:

- (a) a material having the general chemical formula $Mx(DBM)_n$ where Mx is a metal, DBM is dibenzoyl methane, and n is the valency of Mx;
- (b) a cyano anthracene
- (c) a polystyrene sulphonate; and,
- (d) a compound having a general chemical formula as ~~shown in figures 2 or 3 of the drawings.~~ selected from the group consisting of:





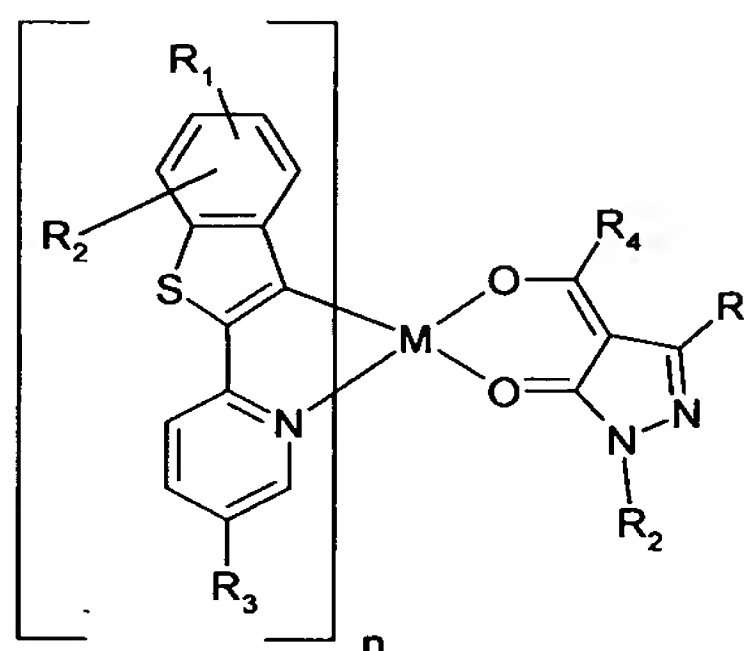


46. (Currently Amended) An electroluminescent device according to claim 42 38
wherein ~~the~~ an electron transmitting material is mixed with the electroluminescent material.

47. (Previously Presented) An electroluminescent device according to claim 38 wherein the first electrode comprises a transparent, electricity-conducting glass electrode.

48. (Previously Presented) An electroluminescent device according to claim 38 wherein the second electrode comprises a material selected from the group consisting of aluminum, calcium, lithium, magnesium, alloys thereof, and silver/magnesium alloys.

49. (New) An electroluminescent compound having the following general chemical formula:



wherein R_1 , R_2 , R_3 and R_4 can be the same or different and are independently selected from the group consisting of hydrogen; substituted and unsubstituted hydrocarbyl groups; substituted and unsubstituted aliphatic groups; substituted and unsubstituted aromatic, heterocyclic and polycyclic ring structures; aryloxy groups; fluorocarbon groups; halogens; and thiophenyl groups; further wherein R_1 , R_2 and R_3 can also form substituted and unsubstituted fused aromatic, heterocyclic and polycyclic ring structures and can be copolymerisable with a monomer; M is selected from the group consisting of ruthenium,

rhodium, palladium, osmium, iridium and platinum; and the sum $(n+1)$ is equal to the valency of M.

50. (New) An electroluminescent compound as claimed in claim 49 wherein at least one of R_1 , R_2 , R_3 and R_4 includes a group selected from heterocyclic groups, alkoxy groups, aryloxy groups, carboxy groups, substituted and unsubstituted phenyl groups, fluorophenyl groups, biphenyl groups, phenanthrene groups, anthracene groups, naphthyl groups, fluorene groups, and heterocyclic groups.

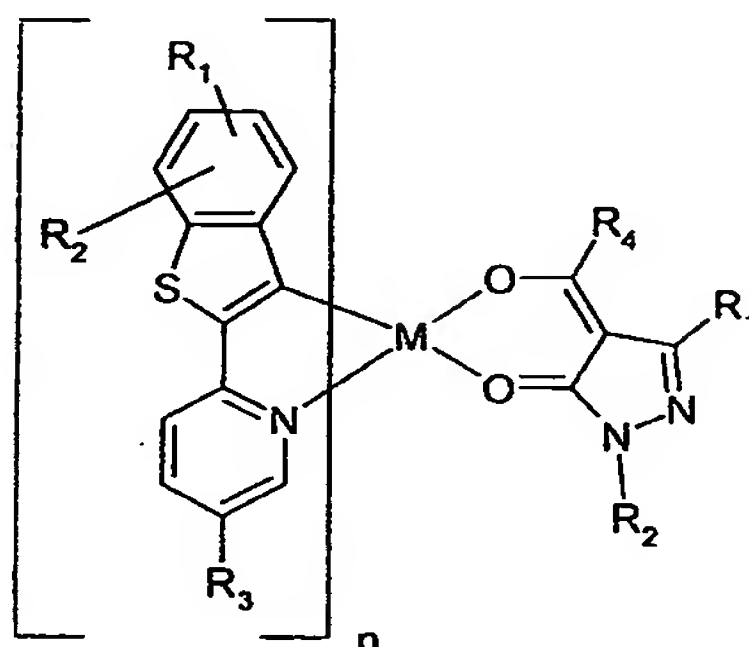
51. (New) An electroluminescent device according to claim 39 wherein the hole transmitting material is a polyaromatic amine.

52. (New) An electroluminescent device according to claim 39 wherein the hole transmitting material is a copolymer of aniline.

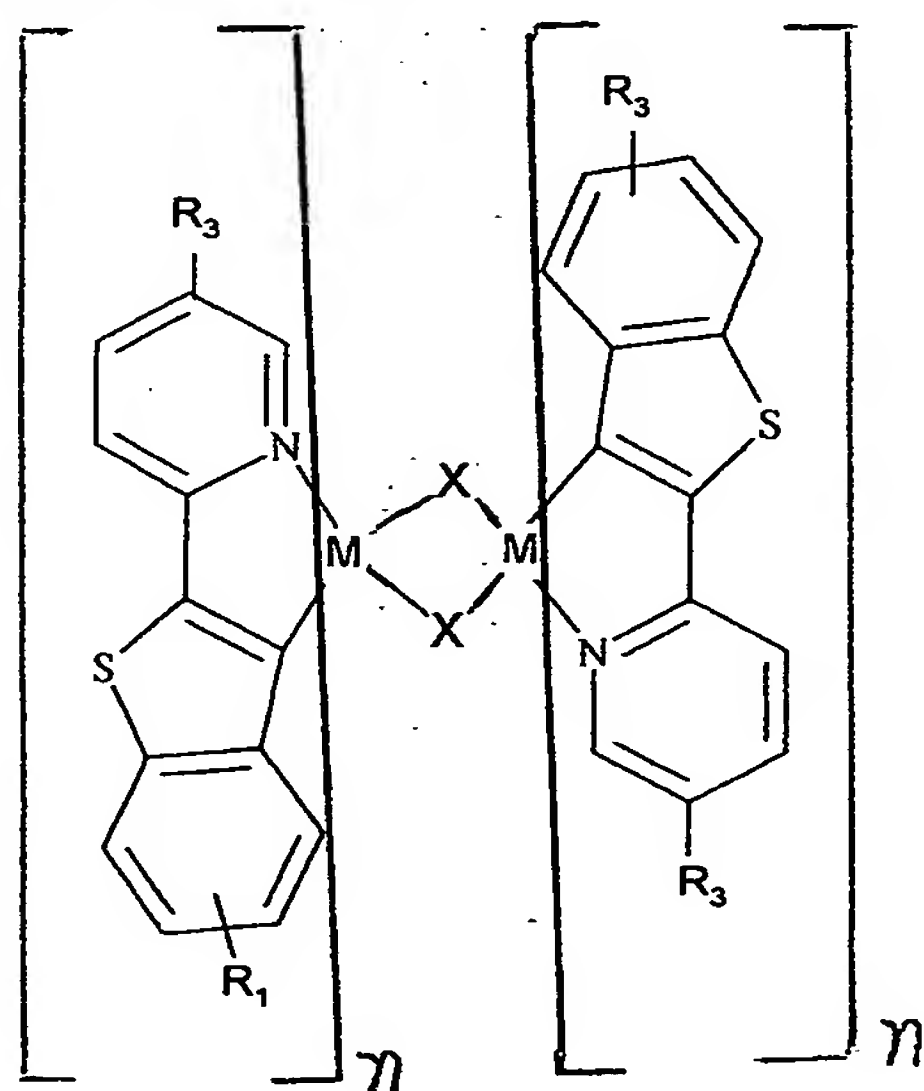
53. (New) An electroluminescent device according to claim 39 wherein the hole transmitting material is a conjugated polymer.

54. (New) An electroluminescent device according to claim 39 wherein the hole transmitting material is a conjugated polymer selected from the group consisting of poly (p-phenylenevinylene) (PPV) and copolymers of PPV.

55. (New) A method of preparing an electroluminescent compound having the general chemical formula



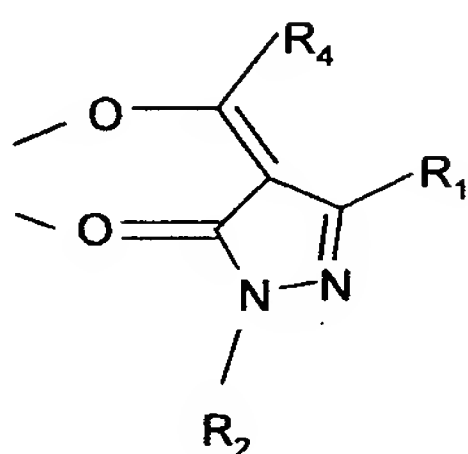
wherein R_1 , R_2 , R_3 and R_4 can be the same or different and are independently selected from the group consisting of hydrogen; substituted and unsubstituted hydrocarbyl groups; substituted and unsubstituted aliphatic groups; substituted and unsubstituted aromatic, heterocyclic and polycyclic ring structures; aryloxy groups; fluorocarbon groups; halogens; and thiophenyl groups; further wherein R_1 , R_2 and R_3 can also form substituted and unsubstituted fused aromatic, heterocyclic and polycyclic ring structures and can be copolymerisable with a monomer, said method comprising the step of reacting a compound having the general chemical formula



Application Serial No. 10/589,183
Amendment and Response

PATENT
Attorney Docket No.: LUC-018

with a compound having the general chemical formula



where R₁, R₂, R₃ and R₄ are defined as above; X is an anion; M is selected from the group consisting of ruthenium, rhodium, palladium, osmium, iridium and platinum; and the sum (n+1) is equal to the valency of M.